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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,587	04/11/2001	Silvia Allegro	33497	1497

116 7590 08/11/2004
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EXAMINER

JACOBSON, TONY M

ART UNIT PAPER NUMBER

2644

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/832,587

Applicant(s)

ALLEGRO ET AL.

Examiner

Tony M Jacobson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date Z.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 26 January 2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because not all the indicated pages were provided (e.g., pages 3-5, 10-12, and 28-33 of reference T ["Auditory Scene Analysis"] were omitted). It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Objections

2. Claims 14, 27, and 30 are objected to because of the following informalities: The word "air" at line one of each claim appears to be a typographical error for "aid"; the following is based on this assumption. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-10, 12/10, 13-21, 23/21, and 24-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Lindemann et al. (US 5,651,071).

5. Regarding claims 1, 5, 13-16, and 26-30, Lindemann et al. discloses a noise reduction system for a hearing aid (and thus, a hearing aid employing the system), that in normal operation performs a method for the elimination of spurious signal components in an input signal, comprising: the characterization, in a signal analysis phase, of signal components of the spurious signal components and of an information signal contained in the input signal (column 2, lines 37-53); and the determination or generation, in a signal processing phase, of the information signal or an estimated information signal on the basis of the characterization obtained in the signal analysis phase, said characterization of the signal components being performed under utilization at least of auditory-based features (e.g. column 4, lines 40-45) to separate speech signals from non-speech signals in the signal processing phase (column 1, lines 22-23; column 2, lines 15-34). Because the methods used for grouping the auditory-based

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features in the method of Lindemann et al. (directionality, short-term amplitude variation from long-term average, and pitch) are rather rudimentary relative to more modern and sophisticated methods known in the art, any of these methods can be described as a "primitive" grouping method, as broadly as claimed.

(Applicant was advised at paragraph 2 of the prior Office action [paper 6], "... any limitations intended for the claims must be explicitly stated in the claims.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Terms used in the claims are interpreted according to their broadest accepted meanings during the examination process." Thus the term "primitive grouping method" is given its broadest common meaning in interpreting the claims.) Also, because the technique of grouping auditory features in the method of Lindemann et al. is based on a systematic or organized framework, it can be described as a "scheme-based grouping technique" as broadly as claimed.

6. Regarding claims 2 and 24, in the method performed by the system of Lindemann et al., loudness ("short-term amplitude deviation from long-term average" – column 3, lines 30-32), spectral profile (column 5, lines 4-10), harmonic structure (column 10, lines 36-56), coherent phases, and level differences (column 9, lines 26-53) are used for the characterization of the signal components.

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7. Regarding claims 3 and 25, Lindemann et al. discloses throughout the specification (e.g., at column 8, lines 7-15) that the auditory features are determined in a plurality of frequency bands that are different from each other.

8. Regarding claims 6 and 17, Lindemann et al. discloses at column 9, lines 16-53 that a directionality estimate "d" is formed for each frequency bin of the frequency-domain signal vector, and this value is used to adjust the gains applied to each frequency bin, such that when a signal component is detected with equal magnitude and phase in both the left and right channels, the signal component is passed (multiplied by a value near 0.5) and when the magnitude and or phase differ, the signal component is subjected to a greater level of attenuation (multiplied by a value near zero). Thus a hypothesis is established or specified on the nature of the signal components (i.e., that target signal components will appear in both the left and right signal channels with equal magnitude and phase, while noise signal components will generally appear with differing magnitudes and phases in the two channels) and is taken into account in the grouping of the identified features, as broadly as disclosed and claimed.

9. Regarding claim 7 (7/5 and 7/6) and 18 (18/16 and 18/17), as described above regarding claims 6 and 17, the noise reducing hearing aid of Lindemann et al. groups signal components according to whether they appear in both the left and right input channels with equal magnitude and phase. These are measures of "similarity", which Applicant recites as a measure that relates to the principles

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of Gestalt theory (page 9, line 16 –page 10, line 20). Also, since the word "gestalt" translates to English generally as "shape" or "pattern", the pitch analysis of Lindemann et al. described at column 10, lines 36-56, by comparing the spectral shape or pattern of the input signal to a number of predetermined spectral patterns, can be said to group signal components along the principles of gestalt theory. Thus, the system of Lindemann et al. groups the auditory features along the principles of Gestalt theory as broadly as disclosed and claimed.

10. Regarding claims 8 and 19, Lindemann et al. discloses at column 11, lines 45-50 that the final voice-detect scaled noise reduction gain is used by multipliers (230) and (232) of Fig. 1 to scale the original left-ear and right-ear frequency domain signals, thus the signal components identified as spurious noise components are suppressed.

11. Regarding claims 9 and 20, Lindemann et al. recites in claim 5, "audio signal synthesizer for synthesizing left and right audio time domain signals from the noise reduced left and right audio frequency domain vectors", and disclose generally that the noise-reduced left and right audio frequency domain vectors are formed on the basis of the features detected in the signal analysis phase.

12. Regarding claims 10 and 21, Lindemann et al. discloses at column 10, lines 36-56 that with the aid of an analysis of the harmonic structure in the signal analysis phase (pitch estimate), different base frequencies of the signal

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component of the information signal or of the estimated information signal are extracted and, with the aid of a loudness analysis (computation of the dot product of the power spectrum with a candidate harmonic spectral grid), spectral levels of harmonics of these signal components are defined, and on the basis of the spectral levels and the harmonics, an information signal for tonal speech components is synthesized (column 2, lines 26-34).

13. Regarding claims 12/10 and 23/21, Lindemann et al. discloses a column 1, lines 19-21 that noise reduction, as applied to hearing aids, means the attenuation of undesired signals and the amplification of desired signals. Thus the method performed by the hearing aid noise reduction system of Lindemann et al. amplifies the information signal or estimated information signal.

14. Claims 1, 11, 12/11, 15, 22, and 23/22 are rejected under 35 U.S.C. 102(b) as being anticipated by Strong et al. (US 4,051,331).

15. Regarding claims 1, 11, 15, and 22, Strong et al. discloses a hearing aid system that in normal operation performs a method for the elimination of spurious signal components in an input signal (column 2, lines 6-13), comprising: the characterization, in a signal analysis phase, of signal components of the spurious signal components and of an information signal contained in the input signal (column 4, line 35 –column 5, line 30); and the determination or generation, in a signal processing phase, of the information signal or an estimated information

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signal on the basis of the characterization obtained in the signal analysis phase, said characterization of the signal components being performed under utilization at least of auditory-based features (column 6, lines 13-19), wherein with the aid of an analysis of the harmonic structure in the signal analysis phase (column 5, lines 17-27), non-tonal signal components of the information signal or of the estimated information signal are extracted and with the aid of a loudness or LPC analysis (Fig. 2, element 112), spectral levels of these signal components are defined , and with the aid of a noise generator an information signal for non-tonal speech components is synthesized (column 6, lines 46-51). As with the method of Lindemann et al. cited above, because the methods used for grouping the auditory-based features in the method of Strong et al. are rather rudimentary relative to more modern and sophisticated methods known in the art, any of these methods can be described as a "primitive" grouping method, as broadly as claimed. Also, because the technique of grouping auditory features in the method of Strong et al. is based on a systematic or organized framework, it can be described as a "scheme-based grouping technique" as broadly as claimed.

16. Regarding claims 12/11 and 23/22, Strong et al. discloses in Fig. 2 (element 160) and describes at column 6, line 65 –column 7, line 9 that the output of the sound generators (152) are applied to a digital summing circuit (156) where the outputs are combined to produce a resultant signal (an information signal or estimated information signal) which is applied to a multiplier (160), which is manually controllable by means of gain control circuit (164) to

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cause the multiplier (160) to multiply the signal received from the summing circuit to allow the user to control the average volume of the output signal. Thus, the information signal or estimated information signal is amplified.

Response to Arguments

17. Applicant's arguments, see paper 8, filed 3 May 2004, with respect to the rejection of claims 4, 5, 7, and 11 under 35 USC § 112, first paragraph and claim 3 under 35 USC § 112, second paragraph have been fully considered and are persuasive. The rejection of these claims under section 112 has been withdrawn.

18. Applicant's arguments with respect to claims 1, 15, and 28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony M Jacobson whose telephone number is 703-305-5532. The examiner can normally be reached on M-F 11:00-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tmj
August 9, 2004


XU MEI
PRIMARY EXAMINER